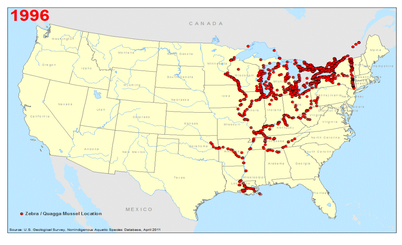
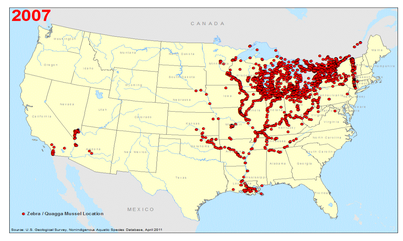
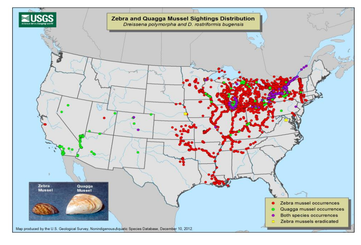
Quagga and Zebra Mussel Biology And History of Invasion

History of Invasion

Native to Ukraine and Russia, quagga and zebra mussels were discovered in the Great Lakes in the late 1980's. In January 2007, quagga mussels were found in Lake Mead, NV. Subsequent surveys found mussels in Lakes Mojave and Lake Havasu in the Colorado River, and within the Colorado River Aqueduct, which serves Southern California. It was the first discovery of either of these mussels west of the Continental Divide. All reservoirs, lakes and watersheds receiving raw Colorado River water have been exposed to quagga mussels. In January 2008, zebra mussels were discovered in San Justo Reservoir, San Benito County.



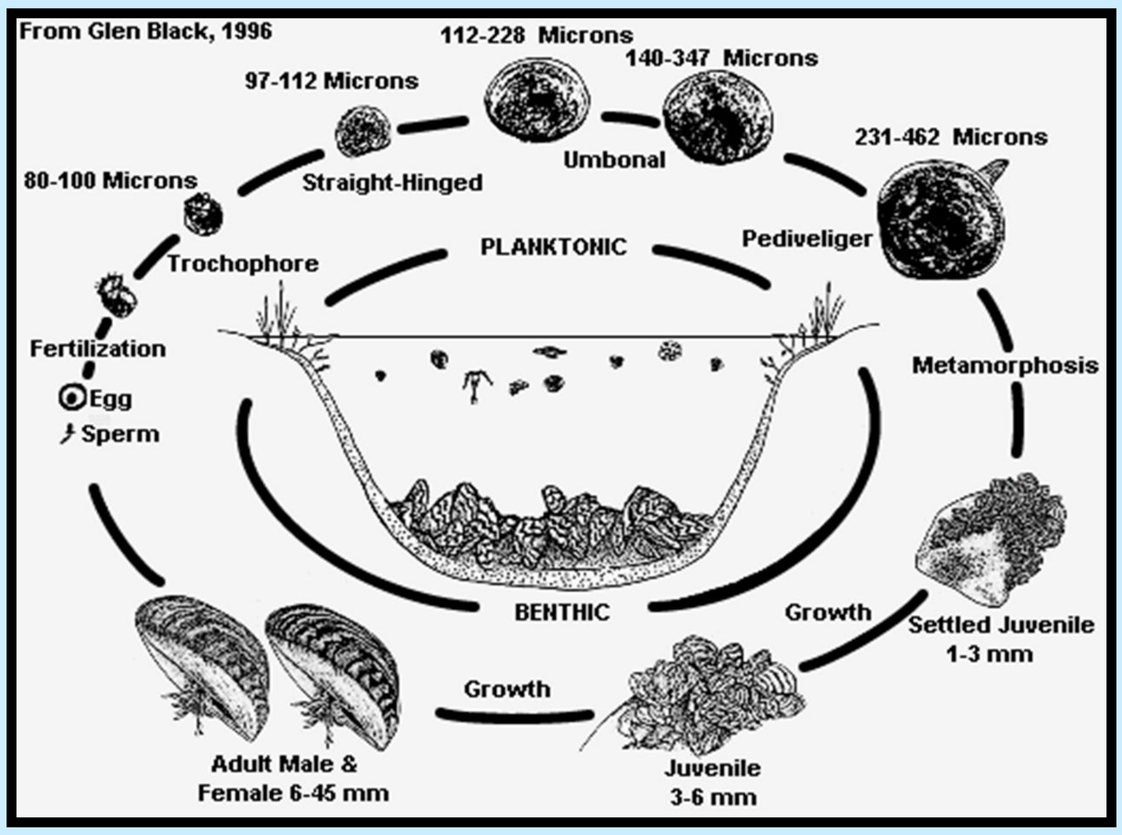




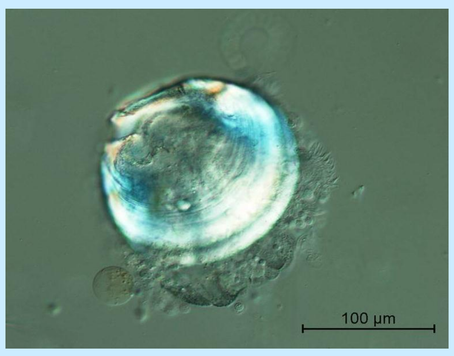
Quagga and Zebra Mussel Biology

- Quagga (*Dreissena rostriformis bugensis*) and zebra (*Dreissena polymorpha*) mussels are invasive, freshwater mussels with D-shaped, triangular shells. Depending on the life stage, mussels range in size from microscopic to the size of a fingernail.
- Quagga and zebra mussels are filter feeders that consume large quantities of plankton that form the base of the food web.
- Adults may spawn multiple times per year and have the potential to produce millions of offspring per spawning season. Free-floating microscopic larval mussels, called veligers, float for weeks before attaching to substrates.
- Zebra mussels colonize primarily on hard substrates from the surface to more than 180 feet in depth. Quagga mussels colonize both hard and soft substrates from the surface to more than 400 feet in depth.
- Adult mussels can survive out of water for five days in hot, dry weather, and up to 30 days in cool or wet weather.

Life Cycle of Quagga/Zebra Mussels



Credit: Glen Black, 1996



Veliger, Larval Life Stage

Quagga Mussel Encrusted Propeller

Quagga Mussels

San Justo Reservoir Zebra Mussel Infestation

Potential Impacts

- Encrust boat engines, hulls, and steering components.
- Prevent movement of water by encrusting water treatment plants and reservoirs.
- Require maintenance and removal from water intake structures, costing taxpayers millions of dollars to repair distribution systems.
- Disrupt the food chain by filtering the water column of phytoplankton and out-competing other species, including sport fish and endangered species.
- Alter water conditions, causing increased aquatic plant growth, oxygen loss, and fish kills.
- Cause restrictions or closure to recreational access.